

WHAT IS CLAIMED IS:

1. A lifting magnet comprising a housing; a rotary magnet unit rotatably accommodated in the housing and comprising a pair of permanent magnets having opposite
5 magnetic poles and a rotational shaft; a stationary magnet unit comprising a pair of permanent magnets surrounding the rotary magnet unit and facing each other across the rotary magnet unit and determining a magnetization state and a demagnetization state according
10 to rotated positions of the rotary magnet unit, the lifting magnet further comprising:

a pinion coupled to the rotational shaft;

a socket moving up and down within a predetermined lifting stroke with respect to the housing;

15 a lifting slider comprising a toothed rack portion to be engaged with the pinion, moving up and down within the lifting stroke, and rotating the pinion to set the magnetization state at a top dead point and set the demagnetization state at a bottom dead point;

20 a locking part provided in one of the socket and the lifting slider;

a locking unit provided in the other of the socket and the lifting slider, comprising a locker to be locked

to and released from the locking part, and lifting up and down both the socket and the lifting slider in the state that the locker is locked to the locking part; and

a locking unit driver alternately driving the
5 locking unit to release the locker from the locking part at a first lifting operation of the socket, and to lock the locker to the locking part at a second lifting operation of the socket.

2. The lifting magnet according to claim 1, wherein
10 the locking unit driver comprises:

an elastic unit provided to slide in a direction transverse to the lifting direction of the socket, and exerting a predetermined elastic force to the locking unit to make the locker of the locking unit be locked to
15 the locking part; and

a latch resisting the elastic force of the elastic unit, reciprocating between a latching position preventing the locking unit from moving toward the locking part and a releasing position allowing the
20 locking unit to move toward the locking part, and contacting and separating from the locking unit,

wherein the latch is placed on the latching position when the socket is first-order lifted up and second-order

lifted down, and the releasing position when the socket is first-order lifted down and second-order lifted up.

3. The lifting magnet according to claim 2, wherein the locking unit driver comprises:

5 a latch elastic unit exerting a predetermined elastic force to place the latch on the latching position; and

 a pusher pressing the latch to place the latch on the releasing position according as the socket is lifted
10 down in the state that the locker is released from the locking part.

4. The lifting magnet according to claim 1, further comprising:

 a projection protruding from an outer wall of the
15 socket;

 a socket case comprising a stopper to stop the projection and to limit the lifting up operation of the socket, coupled to the housing, and supporting the socket to be lifted up and down.

20 5. The lifting magnet according to claim 4, further comprising a band rotatably coupled to the socket case, and coupling the socket with the socket case to prevent the socket from moving up out of the socket case.

6. The lifting magnet according to claims 1 through
5, further comprising at least one idle gear provided
between the pinion and the lifting slider, rotated being
engaged with the rack toothed portion according as the
5 lifting slider is lifted up and down, and transferring a
rotational force to the pinion.